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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/724,170	CAUDILL ET AL.	
	Examiner	Art Unit	
	Dennis Myint	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *81-99* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *81-99* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/01/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Applicant's Amendment, filed on June 13, 2007.

2. In the Amendment filed on June 13, 2007, no amendments were made. Claims 81, 87, and 93 are independent claims. Claim 99 is newly added. As such, claims 81-99 are pending in this case. **This office action is made final.**

Response to Arguments

3. The applicant's arguments filed on June 13, 2007 have been fully considered but are not persuasive.

Referring to claims 95-96, Applicant argued that *dependent claims 95 and 95, which depend from 94, stand rejected only under Maarek in view of Call in view of Liddy and further in view of Dorocak* (Applicant's argument, page 6 last paragraph). In response, it is pointed out that correction is made in this office action to reject claims 95 and 96 under Maarek in vie of Call in view of Liddy, further in view of Dorocak and further in view of De Bellis.

Referring to claim 81, Applicant argued that *applicant's claim 81 recites, among other features, "identifying at least one predicate and argument in said set of document predicate structures"* (Applicant's argument, page 7 third paragraph) and that *In rejecting this feature, the Action relies on paragraph 0117 of Call. However, neither this*

paragraph, nor any other paragraph in Call, describes Applicants' feature of a set of document predicate structures (Applicant's argument, page 7 third paragraph).

Examiner respectfully disagrees all of the allegations as argued. Examiner, in his previous office action, gave detail explanation of claimed limitation and pointed out exact locations in the cited prior art.

Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. See MPEP 2111 [R-1] Interpretation of Claims-Broadest Reasonable Interpretation.

During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecussion and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969).

In response it is pointed out that Maarek in view of Call teaches *identifying at least one predicate and argument in said set of document predicate structures* as follows: "identifying at least one predicate and argument in said set of document predicate structures (Call, Paragraph 0117, i.e. *Items may be organized into* ***"sets"*** *which consist simply of an ordered collection of item numbers which are gathered in accordance with some criteria. For example, a set corresponding to a relational database "table" could be* ***formed by collecting together all items of the same item type in one set****. The items in a set need not be of the same type, however, but may be collected in a single set based on the fact that they share some common attribute. Thus,*

items of type "apple" and of type "orange" may be collected together to form a set named "treefruit." *Importantly, new item types may be derived from existing item types and both may be processed by polymorphic methods commonly used in object-oriented systems*).

Applicant additionally argued that *predicate structures are known by those by those skilled in the art to contain a predicate, which is a verb or preposition ,and a set of arguments, each of which may be any part of speech (Applicant's original specification P. 13, ll. 3-7)* (Applicant's argument, page 7 last paragraph). In response to said argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., *predicates structures which is a verb or preposition, and a set of arguments, each of which may be any part of speech*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Still referring to claim 81, Applicant argued that *Call fails to teach or suggest Applicants' claim 81 feature of, "estimating conceptual nearness of two of said predicate features in sad set of document predicate structures by subtracting corresponding ones of said predicate keys"* (Applicant's argument, page 8 first paragraph) and that *none of the remaining paragraphs of Call or any other portion describes Applicants' feature of "estimating conceptual nearness of two of said predicate features in sad set of document predicate structures by subtracting corresponding ones of said predicate keys*" (Applicant's argument, page 8 last paragraph).

In response, it is pointed out that Maarek in view of teaches said feature as follows: "estimating conceptual nearness of two of said document predicate structures in said set of predicate structures" (Maarek, Page 7 Last Paragraph and Page First Paragraph, i.e. *Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA)*). Maarek teaches a method for clustering using profile (word vectors) and document vectors wherein, "predicate structures" (Maarek et al., Page 5, Paragraph 4, i.e. *An indexing term can be a single term (possibly represented by a canonical form such as its morphological root, lemma or stem), or it may take more complex form such as phrases, syntactic constructs or lexical constructs.*) "are vectorized" (Maarek et al., Page 5, Paragraph 4, i.e., *For example, if the indexing units are single words, then each word represents an axis in a high-dimensional vector space, where the dimension is equal to the number of words in the collection.* and Page 7 Last Paragraph and Page First Paragraph, i.e. *Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA)*).Call teaches the limitations: "set of document predicate structures" (Call, Paragraph 0117, i.e. *Items may be organized into set which consist simply of an ordered collection of item numbers which are gathered in accordance with some criteria* ....and *The time in a set need not be of the same type, however, but may be collected in a single set based on the fact that they share some common attribute. Thus, times of type "apple" and of type "orange" may be collected together to form a set named "treefruit".*), "by a predicate key that is an integer representation" (Call, Paragraph 0070, i.e., *a general purpose database program which*

stores natural language text and a rich variety of other typed data in an array of integers subdivided into data elements called items..)) and "by subtracting corresponding ones of said predicate keys" (Note that, in the method of Call, data elements/concepts are identified by integers and data elements/concepts of similar attribute are organized into sets. Thus, it can be inferred from Call's teachings and method that conceptual nearness is obtained by subtracting corresponding one of predicate keys).

Still referring to claim 81, Applicant argued that *Applicant's claim 81 recites, among other features, "identifying at least one predicate and argument in said set of document predicate structures by a predicate key that is an integer representation". In rejecting these features, the Action relies on various portions of Maarek. Maarek fails to teaches or suggest this feature* (Applicant's argument, page 9 second paragraph) and that *the cited portions of Maarek describe an indexing unit that can be a single term, complex form, or lexical constructs and a lexical affinity (p.7, last para. To p.8, first para.). However, neither the cited portions nor any other portion of Maarek describes "identifying at least one predicate and argument in said set of document predicate structures"* (Applicant's argument, page 9 third paragraph).

In response, it is pointed out that Maarek in view of Call teaches said feature as follows: "*identifying at least one predicate and argument*" (Maarek , Page 5, Paragraph 4, that is, *an indexing can be a single term (possibly represented by a canonical form such as its morphological root, lemma or stem), or it may take more complex forms, such as* ***phrases****, syntactic constructs [Fagan 1989] or lexical constructs (as show later in section 3). For example, if the indexing units are* ***single words****, then each word*

represents an axis in a high-dimensional vector space, where the dimension is equal to the number of words in the collection. Also see the rest of this paragraph of Maarek *) "in said set of document predicate structures" (*Call, Paragraph 0117, i.e. *Items may be organized into* ***"sets"*** *which consist simply of an ordered collection of item numbers which are gathered in accordance with some criteria. For example, a set corresponding to a relational database "table" could be* ***formed by collecting together all items of the same item type in one set****. The items in a set need not be of the same type, however, but may be collected in a single set based on the fact that they share some common attribute. Thus,* ***items of type "apple" and of type "orange" may be collected together to form a set named "treefruit."*** *Importantly, new item types may be derived from existing item types and both may be processed by polymorphic methods commonly used in object-oriented systems) "by a predicate key that is an integer representation" (*Call, Paragraph 0070, i.e., *a general purpose database program which stores natural language text and a rich variety of other typed data in an array of* ***integers*** *subdivided into data elements called items).*

Referring to claim 87, Applicant argued that *Applicants' claim 87 includes similar features as recited above with respect to Applicants' claim 81. As such, claim 87 is allowable over the combination of Call and Maarek for at least similar reasons as stated above with respect to claim 81* (Applicant's argument, page 9 fourth paragraph).

In response, it is pointed out that, as discussed above with respect to claim 81, Maarek in view of Call teach each and every limitation of claim 81. As such, claim 87,

which recites similar features as claim 81, is not allowable over the combination of Maarek and Call.

Referring to claims 82-83 and 88-89, Applicant argued that *dependent claims 82-83 and 88-89, which depend from claims 81 and 87, are allowable over the art of record for at least the same reasons as described above with reference to their ultimate base claim and further in view of the novel features recited therein* (Applicant's argument, page 9 fifth paragraph).

In response, it is pointed out that, as discussed above with respect to claim 81 and claim 87, Maarek in view of Call teach each and every limitation of claim 81 and 87. As such, claims 82-83 and 88-89, which depend from claims 81 and 87, are not allowable over the combination of Maarek and Call.

Referring to claim 99, Applicant argued that *Applicants' new claim 99, which depends from claim 81, is fully supported by Applicants' original specification and allowable over the combination of references for at least the same reasons as its ultimate bas claim and further in view of the novel features recited therein* (Applicant's argument page 9 last paragraph through page 10 first paragraph).

In response, it is pointed out that the ultimate base claim of dependent claim 99 (which is newly added) is obvious over the combination of Maarek in view of Call and additional features, which claim 99 recites, are taught by Wachtel (U.S. Patent Number 5870701).

Referring to claims 84-85 and 90-91, Applicant argued that *Liddy fails to cure the deficiencies of Call and Maarek as noted above with respect to Applicants' claims 81*

and 87. As such, Applicants' claims 84-85 and 90-91, which depend from claims 81 and 87, are allowable over the combination of references at least the same reasons as their ultimate base claim (Applicants' argument, page 10 second paragraph).

In response, it is pointed out that the ultimate base claims of dependent claims 84-85 and 90-91 are obvious over the combination of Maarek in view of Call, dependent claims 84-85 and 90-91 are not allowable over the combination of references.

Referring to claim 93, Applicant argued that *Applicants' claim 93 includes similar features as recited above with respect to Applicants' claims 81 and 87. Dorocak fails to cure the deficiencies of Call, Maarek, and Liddy, as described above with respect to Applicants' claims 81-92. As such, claim 93 is allowable over the combination of references for at least similar reasons as stated above with respect to claims 81-92* (Applicant's argument, page 10 third paragraph).

In response, it is pointed out that, as discussed above, claims 81-92 are obvious over the combinations Maarek, Call, Liddy, dependent claim 93 is also obvious over said references because claim 93 includes similar features as in claims 81 and 87.

Referring to claims 95-98, Applicant argued that *Applicants' claims 95-98, which depend from claim 93, are allowable over the combination of references for at least the same reasons as their ultimate base claim* (Applicant's argument, page 10 last paragraph).

In response, it is pointed out that because the ultimate base claim of claims 95-98 are obvious over the combination of references stated in this and prior office actions, dependent claims 95-98 are not allowable.

In view of the above, the examiner contends that all limitations as recited in the claims have been addressed in this Action. For the above reasons, Examiner believed that rejection of the last Office action was proper.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 81-83, 86, 87-89,and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over of Maarek et al. (hereinafter "Maarek") ("Ephemeral Document Clustering for Web Applications", IBM Research Report, RJ 10186, April 2000) in view of Call (hereinafter "Call")(U.S. Patent Application Publication Number 2002/0143521).

As per claim 81, Maarek is directed to a method for vectorizing a set of document predicate structures (Maarek et al., Page 5, Paragraph 4) and teaches the limitations:

"identifying at least one predicate and argument in said set of document predicate structures (Maarek , Page 5, Paragraph 4)" ; "estimating conceptual nearness of two of said document predicate structures in said set of predicate structures" (Maarek, Page 7 Last Paragraph and Page First Paragraph, i.e. *Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA)*). Maarek teaches a method for clustering using profile (word vectors) and document vectors wherein, "predicate structures" (Maarek et al., Page 5, Paragraph 4, i.e. *An indexing term can be a single term (possibly represented by a canonical form such as its morphological root, lemma or stem), or it may take more complex form such as phrases, syntactic constructs or lexical constructs.*) "are vectorized" (Maarek et al., Page 5, Paragraph 4, i.e., *For example, if the indexing units are single words, then each word represents an axis in a high-dimensional vector space, where the dimension is equal to the number of words in the collection.* and Page 7 Last Paragraph and Page First Paragraph, i.e. *Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA)*) and

"outputting at least one document based upon the estimated conceptual nearness" (Maarek Page 7: Figure 1 An Example of dendogram; Page 18 Figure 5; and Page 19 Figure 6).

Maarek does not explicitly teach the limitations: "set of document predicate structures", "by a predicate key that is an integer representation" and "by subtracting corresponding ones of said predicate keys".

Call teaches the limitations:

"set of document predicate structures" (Call, Paragraph 0117, i.e. *Items may be organized into set which consist simply of an ordered collection of item numbers which are gathered in accordance with some criteria* ....and *The time in a set need not be of the same type, however, but may be collected in a single set based on the fact that they share some common attribute. Thus, times of type "apple" and of type "orange" may be collected together to form a set named "treefruit".*),

"by a predicate key that is an integer representation" (Call, Paragraph 0070, i.e., *a general purpose database program which stores natural language text and a rich variety of other typed data in an array of integers subdivided into data elements called items..*)) and

"by subtracting corresponding ones of said predicate keys" (Note that, in the method of Call, data elements/concepts are identified by integers and data elements/concepts of similar attribute are organized into sets. Thus, it is inherent in Call's method that conceptual nearness is obtained by subtracting corresponding one of predicate keys).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of Call for storing data elements as sequences of integers with the method of Maarek for vectorizing phrases/pairs of concepts (words)

so that the combined method would be a method for "vectorizing a set of document predicate structures, which comprises the steps of identifying at least one predicate and argument in said set of document predicate structures by a predicate key that is an integer representation, and estimating conceptual nearness of two of said document predicate structures in said set of document predicate structures by subtracting corresponding one of said predicate keys." One would have been motivated to do so because computing machines could more efficiently manipulate *characters/symbols* when they are *represented by integers, Booleans, floating points, logical values, or the like* (Call, Paragraph 0009).

Referring to claim 82, Maarek in view of Call as applied to claim 81 above teaches the limitation:

"the method further comprising the further step of constructing multi-dimensional vectors using said integer representation" (Maarek et al., Page 5, Paragraph 4, i.e., *For example, if the indexing units are single words, then each word represents an axis in a high-dimensional vector space, where the dimension is equal to the number of words in the collection* and Page 7 Last Paragraph and Page First Paragraph, i.e. *Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA).*). Note that Maarek employs pairs of words and word vectors. Therefore, vectoring method of Maarek is multidimensional.

Referring to claim 83, Maarek in view of Call as applied to claim 81 above teaches the limitation:

"the method further comprising the further step of normalizing said multi-dimensional vectors" (Maarek et al., Page 5 Third Paragraph, i.e. .... *after normalization.)*

As per claim 86, Maarek teaches the limitation:

"wherein said set of document predicate structures are representations of logical relationships between words in a sentence" (Maarek, Page 7 Last Paragraph and Page First Paragraph, i.e. *Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA)*).

Claim 92 is rejected on the same basis as claim 86.

Claims 87-89 are rejected on the same basis as claims 81-83 respectively.

7. Claim 84-85 and 90-91 rejected under 35 U.S.C. 103(a) as being unpatentable over Maarek in view of Call and further in view of Liddy et al. (hereinafter "Liddy") (U.S. Patent Number 5873056).

As per claim 84, Maarek in view of Call as applied to claim 81 above does not explicitly disclose the limitation: "comprising further step of identifying at least one query predicate structure by a second predicate key that is a second integer representation, and constructing second multi-dimensional vectors, for said at least one query predicate structure, using said integer representation".

Liddy teaches the limitation:

"comprising further step of identifying at least one query predicate structure by a second predicate key that is a second integer representation, and constructing second multi-dimensional vectors, for said at least one query predicate structure, using said integer representation" (Liddy et al., Column 5 Line 23-42). Liddy teaches a method for natural language processing with semantic vector representation, wherein queries are transformed into vectors to match document vectors (Liddy et al., Column 5 Line 23-42).

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to add the feature of transforming queries into vectors as taught by Liddy et al. to the method of Maarek in view of Call so that, in the resultant method, query predicate structures will be included and the method would "further comprise the step of identifying at least one query predicate structure by a second predicate key that is a second integer representation, and constructing second multi-dimensional vectors, for said at least one query predicate structure, using said second integer representation." One would have been motivated to do so in order to *enable retrieving of documents relevant to a query by matching a vector representing the query to the vectors representing documents"* (Liddy Column 1 Line 22-28).

Claim 85 is rejected on the same basis as claim 84.

Claims 90-91 are rejected on the same basis as claim 84-85 respectively.

8. Claim 93 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maarek in view of Call and further in view of Liddy and further in view of Dorocak.

Referring to claim 93, Maarek in view of Call and further in view of Liddy as a combination as discussed above is directed to "the method of constructing multi-dimensional vector representations for each document of a set of documents" (Maarek) and teaches the limitations:

"determining each predicate structure of one or more predicate structures M in each document of the set of documents" (Liddy, Column 5 Line 31-33 *The lexical database which is used determines the SFC's*), "said M predicate structures include a predicate and at least one argument" (Maarek, Page 5, Paragraph 4, i.e. *An indexing term can be a single term (possibly represented by a canonical form such as its morphological root, lemma or stem), or it may take more complex form such as phrases, syntactic constructs or lexical constructs.*); and

"identifying the predicate and the at least one argument in each of said M predicate structures by a predicate key that is an integer representation" (Call, Paragraph 0070, i.e., *a general purpose database program which stores natural language text and a rich variety of other typed data in an array of integers subdivided into data elements called items..*);

However, the method of Maarek in view of Call and further in view of Liddy does not explicitly disclose the limitation " determining the fixed number of arguments q for vector construction".

On the other hand, Dorocak teaches the limitation:

"determining the fixed number of arguments q for vector construction" (Page 104 Line 38-45). Dorocak teaches a method the specification of context-sensitive properties

for programming languages, *wherein the number of arguments are less than the specified number of arguments, the unfilled argument positions are filled with zeroes* (Dorocak, Page 104 Line 38-45, i.e. *Where the number of arguments is less than the number of parameters specified in the corresponding definition, the argument list will be assumed to be filled out by arguments whose value is zero.*).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of filling the unfilled arguments with zeros as taught by Dorocak to the method of Maarek in view of Call and further in view of Liddy et al. so that the resultant method, "would further comprise

determining a fixed number of arguments q for vector construction" (Dorocak, Page 104, *specified in corresponding definition);*

"constructing an N-dimensional vector representation of each document based upon the predicate and q arguments" (Maarek et al., Page 5, Paragraph 4, i.e., *For example, if the indexing units are single words, then each word represents an axis in a high-dimensional vector space, where the dimension is equal to the number of words in the collection.* and Page 7 Last Paragraph and Page First Paragraph, i.e. *Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA).*),

"wherein any predicate structure of said M predicate structures that includes less than q arguments fills unfilled argument positions with a numerical zero" (Dorocak, Page 104 Line 38-45, i.e. *Where the number of arguments is less than the number of*

parameters specified in the corresponding definition, the argument list will be assumed to be filled out by arguments whose value is zero.).

One would have been motivated to do so in order to *provide a syntactic specification of the default attributes of a language by the description of modifications with are to be made the parsed form (syntactic tree) of instances of language.* (Dorocak, Page 101 Line 7-13).

9. Claims 94 and 95-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maarek in view of Call and further in view of Liddy and further in view of Dorocak and further in view of De Bellis (U.S. Patent Number 6760720).

As per claim 94, Maarek in view of Call and further Liddy and further in view of Dorocak as a combination as discussed above does not explicitly teach the limitation: "wherein any predicate structure of said M predicate structures that includes more than q arguments omits remaining arguments after q argument positions are filled".

On the other hand, De Bellis teaches the limitation:

"wherein any predicate structure of said M predicate structures that includes more than q arguments omits remaining arguments after q argument positions are filled" (De Bellis, Column 8 Lines, i.e., *When a parameter related to the search results is adequate* ***truncated****, the parameter is directed to the dispatcher 154;* and Column 14 Lines 18-23, i.e., *If the result list cannot be displayed at the terminal 14,* ***the truncator*** *152 decrements the parameter TP*).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of truncating parameters as taught by De Bellis to the method of Maarek in view of Call, further in view of Liddy and further in view of Dorocak so that the resultant method would comprise parameter/argument truncation. One would have been motivated to do so in order to limit the number of arguments (parameters) to the acceptable number of arguments that an executing program/process could take, which is a notoriously well-known practice in the art of programming languages that excess arguments are truncated (omitted) when number of arguments to a routine is more than the predefined number of arguments of the routine.

As per claim 95, Maarek in view of Call and further in view of Liddy and further in view of Dorocak and further in view of De Bellis teaches the limitation:

"wherein conceptual nearness of two of said N-dimensional vector representation is estimated by subtracting corresponding ones of said predicate keys" ("constructing multi-dimensional vectors using said integer representation" is taught by Maarek on Page 5, Paragraph 4 as *For example, if the indexing units are single words, then each word represents an axis in a high-dimensional vector space, where the dimension is equal to the number of words in the collection."* and Page 7 Last Paragraph and Page First Paragraph, i.e. *Instead of the typical use of single words as indexing units, our indexing unit consists of a pair of words that are linked by a lexical affinity (LA)).* Note that, in the method of Call, data elements/concepts are identified by integers and data elements/concepts of similar attribute are organized into sets. Thus, it is inherent in

Call's method that conceptual nearness is obtained by subtracting corresponding one of predicate keys.

As per claim 96, Maarek in view of Call and further in view of Liddy and further in view of Dorocak and further in view of De Bellis teaches the limitation:

"the method further comprising the further step of normalizing said N-dimensional vector representations" (Maarek et al., Page 5 Third Paragraph, i.e. .... *after normalization.)*

Claims 97-98 are rejected on the same basis as claim 95-96 respectively.

10. Claim 99 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maarek in view of Call and further in view of Wachtel (U.S. Patent Number 5870701).

As per claim 99, Maarek in view of Call teach the limitation: "wherein each document predicate structures in said set includes a predicate and a set of arguments" (See the analysis regarding claim 1 above).

Maarek in view of Call does not explicitly teach the limitation: "wherein the predicate is one of a verb and a preposition".

On the other hand, Wachtel teaches the limitation:

"wherein the predicate is one of a verb and a preposition" (Wachtel, Column 40 Line 57 through Column 41 Line 11, i.e., *As will already be clear, the two different forms*

of processing represented in the above two tabular summaries arise from ambiguity as to whether the ***preposition*** *"on" in the input instruction qualifies the transitive verb "activate" or the noun "camera", the possibilities of ambiguities of this type arising being provided for in the processing defined by Table 2. As can be seen from FIG. 4, the second argument of the meaning of a preposition can form a binding with the first argument of the meaning of a transitive verb or the second argument of the meaning of a noun. The values 909 in* ***the first argument of the predicate "activate"*** *and* ***the second argument of the predicate "on"*** *in the column of the first of the above tabular summaries labelled "from Table B(1)" indicates that in that interpretation the preposition "on" in the input instruction is taken as qualifying the transitive verb "activate" and the subsequent processing represented in the first of the above tabular summaries shows how such an interpretation of the instruction is inconsistent with the data in the knowledge base).*

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Maarek in view of Call to add the feature of defining predicates to be one of a verb and a preposition so that, in the resultant method, predicates would be defined to be one of a verb and a preposition. One would have been motivated to do so in order to *convert input signals from a form representing individual words or other elements of a language, especially a natural language, to output signals in a form in which the meaning of groups of the words or other elements of the natural language is represented and which is suitable for further processing* (Wachtel, Column 1 Lines 10-18).

Conclusion

11. Applicant's arguments have been considered but are not persuasive. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Myint whose telephone number is (571) 272-5629. The examiner can normally be reached on 8:30 AM - 5:30 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-5629. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SHAHID ALAM
PRIMARY EXAMINER